

Appl. No. 10/631,799
Response dated May 23, 2006
Reply to Office Action of February 23, 2006

Remarks/Arguments

Claims 1-32 are pending and stand rejected on varying grounds under §103(a).

All claims are in their Original form. A listing of claims has been provided strictly for the Examiner's convenience.

In view of the comments below, Applicant respectfully submits that the rejections have been traversed and requests that the Examiner reconsider the present application including claims 1-32 and withdraw the rejection of these claims.

- a) Applicant notes with appreciation that the Examiner has considered the art listed on and returned an initialed copy of form 1449.
- b) Claims 1-6, 9, 12-16, 18, 20-22, 25-28 and 31-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (IEEE, "a decorrelating RAKE receiver for CDMA Communication over Frequency-selective Fading Channel". Vol. 47, No. 7 , July 1999).

Claims 1, 13, 21, and 26 are independent claims with all other claims dependent on the closest lowered numbered one of the independent claims.

These claims define various aspects of an invention that includes explicitly and definitely or precisely and directly determining or calculating or computing explicitly with a predetermined number of computations, filter coefficients for a plurality of filters.

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Liu et al. may be viewed as relevant art and does show or at least suggest one version of a decorrelating RAKE receiver including filters, a coefficient generator and a combiner. However Liu et al does not show or suggest all features of any of claim 1, 13, 21, or 26. In particular, Lie et al does not show a coefficient generator to explicitly and definitely determine the filter coefficients for the plurality of filters for a decorrelating rake process as recited in claim 1 and claim 26 or determining, precisely and directly, the filter coefficients for a plurality of such filters as recited in claim 13 or compute, explicitly with a predetermined number of computations, the filter coefficients for a plurality of such filters as recited in claim 21.

The scheme in Liu et al. for obtaining filter coefficients is one version of known approaches to iteratively estimating the coefficients, rather than explicitly, definitely, and directly calculating, determining or computing such coefficients. The Examiner cites equation (7) of Liu et al as suggesting the claimed coefficient generator or coefficient determination process. Applicant respectfully disagrees and notes that Equation (7) is an example of an equation that is easy to write but heretofore not one that had a closed form solution that was practical to implement, i.e., one where coefficients could be directly and deterministically derived in a practical manner.

One estimated solution to equation (7) as discussed by Liu et al is given by equation (11). This will be recognized by those of ordinary skill as an iterative equation, i.e., where a final estimate is arrived at by iteratively evaluating the equation. Also known is the various problems associated with this form of equation, e.g., the rate of convergence and error is a trade off related

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to step size as discussed in the passage directly following equation (11) in Liu et al. These issues are also mentioned in the present specification (for example, see paragraph beginning at page 23, line 23).

A closed form solution to Lui et al equation (7) is given by equation (12), which heretofore did not have a practical solution for applications such as decorrelating rake receivers and the like. Thus iterative techniques, e.g. equation (11), with all of their respective limitations and convergence issues were used to approximate optimum coefficients in such applications. Note that Liu et al. in the passage immediately following equation (12) admits that the weight vector (from equation (11)) will converge to its optimum value with probability 1 only when the number of data points approach infinity, i.e., it is only ever an estimate and is not a direct explicit computation of the filter coefficients as variously claimed. The Examiner is referred to the specification at, e.g., page 16, line 8 et sequence, for a description of various embodiments of explicit and direct determination of optimum filter coefficients.

At least in view of the above noted reasons, it is clear that Lui et al does not show or suggest the computation or determination of filter coefficients in a direct and explicit manner as variously claimed by independent claim 1, 13, 21 or 26 and thus does not support a §103(a) rejection of independent claims 1, 13, 21 or 26 or at least by virtue of dependency, any claims dependent on any of these claims.

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Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-6, 9, 12-16, 18, 20-22, 25-28 and 31-32 under 35 U.S.C. 103(a) as being unpatentable over Liu et al (IEEE, "a decorrelating RAKE receiver for CDMA Communication over Frequency-selective Fading Channel", Vol. 47, No. 7 , July 1999).

c) Claims 7-8, 10-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al in view of Wang et al (IEEE, "Adaptive joint multiuser detection and channel estimation in multipath fading CDMA channels", Wireless Networks 4, 1998, pages 453-470).

Claims 7-8 and 10-11 are dependent on claim 1. As noted above Liu et al does not show or suggest all features of claim 1. Wang et al. taken alone or together with Liu et al does not show or suggest the teachings missing from Liu et al and thus claim 1 is allowable over this combination of references. At least by virtue of dependency claims 7-8 and 10-11 should likewise be allowable.

Therefore and by virtue of dependency on claim 1, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 7-8, 10-11 under 35 U.S.C. 103(a) as being unpatentable over Liu et al in view of Wang et al (IEEE, "Adaptive joint multiuser detection and channel estimation in multipath fading CDMA channels", Wireless Networks 4, 1998, pages 453-470).

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Accordingly, Applicant respectfully submits that the claims, as amended, clearly and patentably distinguish over the cited reference of record and as such are to be deemed allowable. Such allowance is hereby earnestly and respectfully solicited at an early date. If the Examiner has any suggestions or comments or questions, calls are welcomed at the phone number below.

Although it is not anticipated that any fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. **50-3435**.

Respectfully submitted,

Charles W. Bethards
Charles W. Bethards
Reg. No. 36,453

Law Office of Charles W. Bethards, LLP
P.O. Box 1622
Colleyville, Texas 76034
Phone (817) 581-7005
Fax (817) 281-7136
Customer No. 51874